DOCUMENT RESUME

ED 409 499 CG 027 400

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TITLE Cooperative Interventions: Strategies To Promote Positive Behaviour.
PUB DATE Sep 96
NOTE 11p.; Paper presented at the Annual Meeting of the Queensland Guidance and Counselling Association (9th, Brisbane, Queensland, Australia, September, 1996).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Classroom Techniques; College Students; *Cooperative Learning; Educational Strategies; Foreign Countries; *Group Dynamics; Higher Education; Interaction; Interpersonal Communication; Intervention; *Learning Strategies; Learning Theories; Peer Influence; Primary Education; Small Group Instruction; *Student Behavior; Teamwork
IDENTIFIERS Australia

ABSTRACT

In cooperative learning, children are assigned to small groups to work on curriculum-based tasks while teachers move among the groups to offer assistance and to monitor progress. Despite the benefits and appeal of this learning method, it has been demonstrated that not all cooperative learning groups are equally successful in the classroom. In this 6-week study, the behaviors and interaction characteristics of 192 six-year-old children in structured and unstructured groups were investigated. Five teachers and a class of university students observed and evaluated interactions of the children in video segments. The structured group of children participated in two training sessions about interpersonal and small-group skills which facilitate cooperation. The unstructured group of children were told to cooperate and work together but were given no training. The findings demonstrate clear differences between student behavior in the two groups. Children in the structured condition exhibited more cooperative behaviors and fewer noncooperative behaviors than peers in the unstructured condition. They were also seen to be more responsive to the needs of other group members. These results are consistent with previous research which found that the structure of student work groups influences the level of interaction between group members. (LSR)

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Cooperative interventions: Strategies to promote positive behaviour

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Research over the last two decades has highlighted the benefits that accrue to students from cooperative group interventions. These interventions have facilitated the acquisition of problem-solving strategies, verbal abilities, metacognitive knowledge, and content knowledge which have promoted academic achievements (Cohen, 1994; Johnson & Johnson, 1990; Sharan & Shaulov, 1990).

Furthermore, many teachers who have implemented cooperative learning methods have seen and appreciated how they can be used in classrooms not only to assist children to learn to work together, but also to help teachers to deal with many of the major issues they confront in typical classrooms today. There are a number of aspects of cooperative learning that account for its appeal.

First, cooperative learning enables class teachers to manage large numbers of students in single classrooms, while ensuring that their time is spent productively in learning activities (Sharan, 1990). In cooperative learning, children are assigned to small groups to work on curriculum-based tasks while teachers move among the groups to offer assistance and to monitor progress. In contrast, teachers in traditionally structured classrooms present information in didactic presentations and often have little time to interact with students and facilitate learning because of the need to manage student behaviour and maintain discipline (Kagan, 1986).

Second, cooperative learning methods encourage all students to be active members of small work groups and to work together on the task (Sharan, 1990). In cooperative learning, this usually involves taking responsibility for completing one's share of the work which contributes to the attainment of the group goal, while assisting others to complete theirs (Johnson & Johnson, 1990).

Third, cooperative learning encourages each child to assist and support others by sharing information and ideas while working together on a group task. In providing support, children often develop new understandings of issues as they seek to validate

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their own views and perspectives while trying to understand and adjust to those of others.

Fourth, cooperative learning encourages a high degree of engagement in the group task. While working together, students often develop social relationships which are not only seen as desirable by many class teachers, but which often lead to increased participation and involvement with group members (Sharan & Shaulov, 1990).

Finally, cooperative learning appears to have a positive effect on students' classroom behaviours. Hertz-Lazarowitz and Shachar (1990) found that there was a significant decline in students' boredom and disruptive behaviours in classrooms in which cooperative learning methods were used. These changes were attributed, in part, to the power that children had to make decisions which affected their own work, and to the way in which teachers facilitated the children's learning by offering guidance and assistance rather than by directing learning.

While cooperative learning appeals to many teachers because of the positive changes they have seen in students' behaviours, it has been demonstrated that not all cooperative learning groups are equally successful in the classroom (Gillies & Ashman, 1994). Placing students in small groups and telling them to work together does not necessarily promote cooperation and achievement (Johnson & Johnson, 1990). It is only when groups are established so that students understand how they can work together to attain the group goal that the potential for learning is maximised (Johnson & Johnson, 1985; Slavin, 1987).

However, developing this understanding in students requires an effort on the part of the teacher to teach those interpersonal and small-group skills which are necessary for successful group cooperation. Moreover, not only must group members be taught the skills required for effective collaboration, but they must also be given the opportunity to use them (Johnson & Johnson, 1990). Four elements appear to affect successful cooperation.

Essential elements of cooperative learning

First, students need to understand that they must synchronise and coordinate their efforts if they are to work successfully together to complete the group task. In cooperative learning groups, each student is not only required to complete the task but to ensure that others do likewise. The technical term for this dual responsibility is

positive interdependence and it is the most important factor in determining the success of cooperative groups (Johnson, Johnson, & Houlbec, 1990). When positive interdependence is clearly understood, then each group member's efforts are indispensable for the success of the group (Johnson & Johnson, 1990).

Second, students need to understand that they are required to accept personal responsibility for completing their share of the group task (Johnson & Johnson, 1990). It has been suggested that the stronger the positive interdependence structured within a group, the more group members will feel personally responsible for contributing to the collective effort. Individual accountability can be structured by requiring students to report to the group on their individual contributions towards its goal.

Third, children need to develop appropriate interpersonal and small-group skills if they are to work cooperatively and these skills need to be taught just as purposefully and precisely as academic skills. Children who learn these cooperative skills are more likely to have a greater understanding of the learning needs of other group members and are more likely to provide support and assistance. The exchange of information, giving help, giving explanations, asking questions, seeking content clarifications and elaborations are a common part of students interactive behaviours in cooperative groups and contribute to academic achievement (Webb, 1991). Certainly, the opportunity to discuss academic and learning problems plays a role in children's intellectual functioning and development, in addition to their status relationships with their peers (Cohen, 1994; Sharan & Shachar, 1988). Research indicates, for example, that when interpersonal and small group skills are taught, positive relationships are more likely to develop among children of different abilities and these relationships can generalise to situations outside the original training situation (Putan, Rynders, Johnson, & Johnson, 1989).

Last, groups need to be given time to discuss the contributions of their members and to make decisions about what actions to continue or change (Johnson & Johnson, 1990). Being able to reflect on their working relationship forces the members to analyse what they did and how they can improve. Questions such as "What did we do that was helpful?" "What could we improve?" "How can we do things next time?" are designed to encourage self-evaluation of group functioning and achievements. When students spend time orally summarising, explaining, and elaborating on the material to

be learnt and checking the accuracy of each other's summaries, mastery and retention of the material is promoted (Gillies & Ashman, 1994).

When groups are established so these elements are included, students are more likely to provide more help to each other and work together to attain mutual goals (Hertz-Lazarowitz, 1989). The willingness to cooperate in offering and receiving help promotes interpersonal relationships, positive student attitudes towards school work, and enhances self-esteem (Harter, 1992; Johnson, Johnson, Scott, & Ramole, 1985). Furthermore, when children are trained to use cooperative small-group processing skills, they demonstrate greater individual and group problem-solving success than students who are not trained to use these skills (Johnson, Johnson, Stanne, & Garibaldi, 1990; Yager, Johnson,& Johnson, 1986).

This paper reports on a six- week study undertaken by the author that provides support for the importance of structuring cooperative groups to promote cooperative group behaviours and interactions.

Method

The study investigated the behaviours and interaction characteristics of structured and unstructured groups.

Participants. The study involved three groups of participants. These were the primary school children involved in the two conditions, teacher raters involved in the evaluation of videotaped group interactions, and a group of university students.

Children. One hundred and ninety-two, Year 6 children participated in this 6 week study. The children were assigned to mixed ability, gender balanced groups.

Teacher raters. Five experienced teachers were asked to observe and evaluate the behavioural interactions of the children on the video recordings.

University students. A class of university students who had participated in a workshop on cooperative group work, also observed and rated the behaviours of the children in the video segments.

Instruments

ACER General Ability Test F (GAT Test F) This group-administered general ability test (de Lemos, 1982) was administered and used to assign students to groups.

Observation schedule. A schedule was adapted using two coding procedures to code the behaviour states and constructive inputs during recorded sessions. The four

behaviour state categories used were: (a) Cooperative behaviour; (b) Non-cooperative behaviours; © Individual non-task behaviours and confusion; and (d) Individual task-orientated behaviour. The eight interaction variables coded in the second part of the schedule were identified: (a) Non-specific verbal interactions; Giving help was classified according to (b) unsolicited help-explanations, © terminal responses, and (d) other help which could not be categorised as either an explanation or a terminal response; and Solicited responses to (e) requests for help- explanations, (f) terminal responses, (g) no response (ignored), and (h) all other help which could not be categorised into either of the previous categories.

Procedure

Structured groups. The children participated in two initial training sessions which were designed to teach the children the interpersonal and small-group skills to facilitate group cooperation.

Unstructured groups. The children were told to cooperate and work together and they were given the same length of time as their peers in the structured groups to discuss how they were going to proceed.

Results

A multivariate analysis of covariance (MANCOVA) with 12 criteria and 12 covariates (scores at Time 1) was performed on the data. The MANCOVA yielded a Hotellings T2 of 0.45; the associated $F(12,146)=5.0$, $p<.001$). An examination of the univariate results showed four significant effects: Cooperation, $F(1, 146)=4.74$, $p<.05$, Noncooperation $F(1, 146) = 11.42$, $p<.001$), Solicited Explanations, $F(1, 146) = 27.51$, $p<.001$, and Unsolicited Other Help, $F(1, 146) =4.60$, $p<.05$.

The above results demonstrate marked differences between the cooperative and non-cooperative behaviours and interactions of students working in the two group conditions on four key variables. As can be seen from Table 1, the students in the structured cooperative groups engaged in more cooperative behaviours and in less noncooperative behaviours than those students in the unstructured groups. They were also more responsive to peers and gave more explanations with the task.

Videotape observations by teachers.

Five experienced teachers viewed randomly selected video segments from the two group conditions and described the behaviours which represented each condition. The

children in the structured cooperative group were described as involved in the task, communicating effectively (e.g., using eye-contact), and participating in the group. While these behaviours occurred in the unstructured group, they did not occur as systematically nor as frequently.

The observations of the students' behaviours made by the teachers were then used to help develop a questionnaire which could be used by a group of university students to rate the behaviours observed.

Table 1: Means (and Standard Deviations) of the frequency of the Behaviour States and Constructive Input Categories for the Structured and Unstructured Conditions.

Variable	Structured (n=96)		Unstructured (n=96)	
Behaviour State	Time 1	Time 2	Time 1	Time 2
Cooperation	30.2 (3.90)	30.8 (4.41)	25.5 (5.20)	25.0 (4.80)
Noncooperatio	0.60 (1.30)	0.80 (1.50)	2.8 (3.10)	3.6 (2.80)
Constructive Inputs				
Solicited Explanations	4.50 (1.60)	4.7 (1.50)	0.70 (0.91)	0.62 (0.80)
Unsolicited Other Help	4.4 (2.95)	3.7 (2.57)	1.4 (1.37)	1.1 (1.10)

Observations of the videotapes by the university students.

The Observations of Video Questionnaire which was developed by the teacher raters was used by the university students to rate their responses to the two group conditions represented by the video segments. The data were analysed as a means of externally validating the characteristics described by the experienced teachers. The results of the university students' responses to the video segments are presented in Table 2. Because of the small number of student teachers (N=17), multivariate analyses of variance (MANOVA) were performed on each of the three sets of variables: Task Involvement, Communication, and Participation. A MANOVA performed using the four measures of Task Involvement yielded a significant Hotellings T2 of 7.42, $F(4, 32) = 53.84$, $p<.001$ permitting an examination of the univariate F-tests, all of which were significant as shown in Table 2. The children in

the structured group condition exhibited a stronger involvement in the group task than those in the unstructured group condition.

A second MANOVA using the five measures of Communication also yielded a significant Hotellings T2 of 3.69, $F(5, 32) = 20.70$, $p<.001$ and again the univariate F-tests were significant (See Table 2). The children in the structured cooperative condition exhibited more effective communication patterns than those in the unstructured group condition. A third MANOVA using the three measures of Participation again yielded a significant Hotellings T2 of 7.49, $F(3, 32) = 74.93$ $p<.001$) and again the univariate F-tests were significant See Table 2). This revealed that the children in the structured cooperative condition had higher participation rates in group activities than those in the unstructured group condition.

Discussion

The results reported above demonstrate clear difference between the behaviour of students in the two group conditions with the children in the structured cooperative condition exhibiting more cooperative behaviours and less non-cooperative behaviours than peers in the unstructured condition. In addition, they were seen to be more responsive to the needs of other group members. Their communications were generally more intensive in that they gave eye contact to the speaker and listened actively. They not only answered more questions posed by group members, but also gave more general help (both verbal and non-verbal) to each other.

These findings suggest that the structured group condition established by teachers in this study promoted cooperative behaviour which was clearly observable in the interactions among the group members. These results are consistent with the work of other researchers who have found that the structure of student work groups influences the level of interaction between group members (Hertz-Lazarowitz, 1989; Kagan, 1986; Webb, 1985).

Table 2: Means (and Standard Deviations) and F Values of the university students' responses on three dimensions for the Structured and Unstructured Conditions.

Variable	Structured	Unstructed	F Value	
Task Involvement				
Clear understand of task demands	4.2	2.2	49.19	*
	(0.75)	(0.90)		
Actively engaged	4.0	1.7	81.52	*
	(0.65)	(0.84)		
Working Cooperatively	4.1	1.5	172.08	*
	(0.53)	(0.61)		
Working on-task	4.2	1.6	140.80	*
	(0.66)	(0.62)		
Communication				
Listen to others	4.2	2.3	77.06	*
	(0.56)	(0.57)		
Eye contact with speaker	3.9	2.06	81.11	*
	(0.55)	(0.66)		
Seeks opinions of others	3.5	1.7	50.91	*
	(0.87)	(0.58)		
Accepts ideas of others	3.53	1.90	30.75	*
	(0.94)	(0.78)		
Explains ideas to others	3.64	1.82	40.46	*
	(0.86)	(0.80)		
Participation				
Respond to group needs	3.5	2.0	31.02	*
	(0.79)	(0.86)		
Organised working in the group	4.3	1.5	134.54	*
	(0.78)	(0.62)		
Group agreement on answers	4.0	1.4	137.28	*
	(0.79)	(0.49)		

* $p < .001$ Response categories: 1. Almost never happened; 5. Almost always happened

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